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Current Population Reports

Household
Economic Studies
Series P–70, No. 16–RD–2

Spells of Job Search and Layoff . . . and Their Outcomes

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Data from the Survey of Income and Program Participation

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Acknowledgments

Paul Ryscavage prepared this report in the Housing and Household Economic Statistics Division, under the general direction of **Gordon W. Green, Jr.**, Acting Division Chief. **Angela Feldman-Harkins** was responsible for data processing activities.

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Economic Studies
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Spells of Job Search and Layoff . . . and Their Outcomes

Data from the Survey of Income and Program Participation

Issued July 1989

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for Economic Affairs

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Spells of Job Search and Layoff... and Their Outcomes

INTRODUCTION

This report presents an analysis of the spells of job search and layoff that began in 1984 and the outcomes of those spells. The data provide a rare glimpse of some of the characteristics of these spells—who experienced them, how long they lasted, whether health and unemployment insurance coverage was in force— and their outcomes—how many ended as a result of a job or by a withdrawal from the job market. As was reported by the Bureau of Labor Statistics (BLS), the Nation's economy during this period was still recovering from the 1981-82 recession and employment was growing vigorously and unemployment was dropping sharply.[1]

The data on spells of job search and layoff discussed here are different from the official unemployment data reported by the BLS. The BLS data are cross-sectional, that is, they indicate how many people were unemployed at a *point-in-time*. Embodied in that estimate are the persons who have just entered and exited the unemployment pool as well as those who remained unemployed. The data on spells of job search and layoff discussed in this report are longitudinal. They relate to the experience of the same people *through time*, that is, from the time they began looking for work or periods of layoff to their completion of the spells of job search or layoff.

The distinction between these two types of data is an important one. With the official unemployment data, it is difficult to observe changes in the economic welfare of the same individuals that may take place during a period of job search or layoff. Similarly, it is difficult to observe the outcomes of spells, that is, whether individuals either found or returned to jobs or withdrew from the labor force. With longitudinal data, these and other matters associated with the spell of job search or layoff can be examined.

The source of the data on spells of job search and layoff examined in this report is the 1984 panel of the Survey of Income and Program Participation (SIPP), a longitudinal survey of approximately 2 1/2 years duration. Although the primary purpose of this survey is to collect information on the incomes received by individuals and the extent to which they participate in Federal government transfer income programs, it also collects information on labor force activity. The linkage of the labor force data to the income and program participation data in a longitudinal context make them particularly useful for examining such subjects as the economic welfare of persons looking for work and on layoff from jobs.

The BLS's employment and unemployment statistics are the Federal government's official estimates and they are collected in the monthly Current Population Survey (CPS). This survey has provided policy makers and researchers with monthly labor force information since the 1940's. In addition, in the March CPS, supplemental questions are asked about the annual work experience of individuals in the previous calendar year. Labor force data from SIPP can enhance what we have learned from both the monthly and March CPS supplement, and it is in this context that this report should be viewed. Differences in labor force concepts and survey procedures exist between the SIPP and CPS, so data comparability is problematic. (See appendix B for a description of some of these differences.) Furthermore, since the SIPP sample is considerably smaller than the CPS, the data results are subject to greater sampling variability (see appendix C).

HIGHLIGHTS

(The figures in parentheses signify the 90 percent confidence intervals of the estimates.)

- In 1984, 26.7 (±.7) million spells of job search and layoff began and were completed either in that year, 1985, or early 1986. These spells were attributed to 21.7 (±.5) million persons. Women made up 11.7 (±.4) million of the total and men 10.0 (±.4) million.
- The "approximate" average length of a spell of job search or layoff was 3.4 (±.1) months. The average for men was 3.6 (±.2) months and for women, it was 3.2 (±.1) months.
- Of the 11.0 (±.4) million persons beginning their first spell of job search or layoff in 1984 and who had health insurance coverage previous to the spell, 20.1 (±1.5) percent either had no coverage or only some coverage during the spell.
- About 54.0 (±6.1) percent of the spells of job search and layoff of 5 months or longer experienced by men aged 25 to 54 were covered by unemployment insurance.

[1]See Richard Devens, Jr., Carol Boyd Leon, and Debbie Sprinkle, "Employment and Unemployment in 1984: A Second Year of Strong Growth in Jobs," *Monthly Labor Review*, February, 1985, pp. 3-15.

- About two-thirds—67.4 (±1.3) percent—of the total spells ended with a job. Men were more likely to end their spells with a job than women, and Whites more likely than Blacks and Hispanics.
- On average, the hourly earnings of jobseeking workers on their new job—$5.81 (±.16)—were lower than on their previous job—$6.18 (±.17).
- For those persons who had no previous job during the survey (possibly new entrants or re-entrants to the labor force), but after a period of search took a job, hourly earnings averaged $4.46 (±.19).
- For persons who did not find jobs after their first spell of job search or layoff, average monthly household income fell from $1,878 (±82) before the spell began to $1,737 (±78) after the spell ended.

DEFINING SPELLS OF JOB SEARCH AND LAYOFF

Spells of job search and layoff are periods of time in which jobless persons are actively looking for work or have been released from jobs that they may or may not be called back to. Such spells are commonly associated with persons who lose their jobs (or are laid off) as a result of a business slowdown or plant closing. But other spells arise, for example, when persons quit their jobs to find better ones, or when persons start looking for work for the first time. Still others come about when individuals who have been out of the labor force for some time decide to go back to work.

Most spells of job search and layoff have identifiable beginnings and endings because they involve events to which persons attach some significance. But some spells are not as identifiable. Researchers have found that for certain groups in the population the distinction between looking for work and being outside the labor force is weak.[2] A jobseeker, after a period of unsuccessful job search, may become discouraged and give up looking for a while, but then resume the search later on. In such cases, whether or not the individual experienced one spell or a series of spells is difficult to determine.

It should be noted that a person can experience more than one spell of job search or layoff in the course of a year. For example, a young college graduate may "job hop" before finding the right job and experience two or three spells of job search, or a construction worker may be laid off several times in the year after construction projects are completed.

The labor force information collected in SIPP reflects, to some degree, the movement of persons into and out of spells of job search and layoff. This is because survey respondents were interviewed every 4 months between the second half of 1983 and the first half of 1986, thereby providing a panoramic view of their labor force behavior. Respondents were asked to recall the weeks in which they had jobs, and if they did not have jobs, whether or not they were looking for work or on layoff in those weeks. (Because of the questionnaire design it was not possible to separate persons who reported they had been laid off from those reporting they were looking for work.)

For the purposes of this report, only persons who began spells of job search (looking for work) or layoff in 1984 and completed them in 1984 or 1985 or early 1986 are analyzed. As shown in the table below, these persons totaled 21.7 million and they experienced 26.7 million spells of job search and layoff.

Subject	Persons (thous.)	Spells (thous.)
Total	21,674	26,749
1 spell	17,296	17,296
2 spells	3,774	7,548
3 spells	518	1,554
4 spells	80	320
5 spells	6	30

Only a small number of spells that began in 1984 extended beyond the life of the survey (less than 2 percent). Persons with multiple spells beginning in 1984 are included (as shown above), but persons beginning spells in earlier years which ended in 1984 are excluded.

Because SIPP was designed to measure income and program participation during 2 1/2 year periods of time, the basic time unit in the survey is the month (even though the labor force data are collected in terms of weeks). This creates problems when measuring labor force activity. For example, an individual in the course of a month could begin looking for a job and then find one (unemployed and employed) or be outside the labor force and then start looking for work (not in the labor force and unemployed).

In SIPP, cases of multiple labor force statuses during a month are handled by means of a series of employment status recodes that are discussed in appendix B. Basically, what these recodes do is to classify individuals into the various combinations of statuses that are possible during a month. In this report, persons who reported that they were "looking for work or on layoff" either at some time in the month or for the entire month are considered as having a spell of job search or layoff. Moreover, looking for work or on layoff for only part of a month is counted as a full month of job search or layoff. Duration estimates of completed spells of job search and layoff, therefore, are somewhat overstated and should be considered "approximations," since not all the specific starting and ending points of spells are known from the recodes.

[2] See Kim B. Clark and Lawrence H. Summers, "Labor Market Dynamics and Unemployment: A Reconsideration," in *Brookings Papers on Economic Activity*, No. 1, 1979, pp. 13-72.

Table A. **Persons Who Had Spells of Job Search and Layoff, by Age, Sex, Race, and Hispanic Origin**

(Covers spells that began in 1984 and were completed in 1984, 1985, or early 1986. Numbers in thousands)

Age and sex	All persons	White	Black	Hispanic[1]
Both sexes	21,674	17,135	3,875	1,755
Male	10,003	8,067	1,646	823
16 to 19 years	2,273	1,688	525	221
20 to 24 years	2,145	1,728	361	195
25 to 54 years	4,751	3,933	656	332
55 to 64 years	627	539	75	60
65 years and over	208	180	29	15
Female	11,671	9,068	2,229	932
16 to 19 years	2,268	1,706	516	88
20 to 24 years	2,503	1,944	498	219
25 to 54 years	5,988	4,669	1,090	575
55 to 64 years	793	644	109	51
65 years and over	119	103	16	-

- Represents zero.
[1]Persons of Hispanic origin may be of any race.
NOTE: Components may not add to totals because of rounding.

PERSONS BEGINNING SPELLS OF JOB SEARCH AND LAYOFF IN 1984

A total of 21.7 million persons began at least one spell of job search or layoff in 1984 that ended either in 1984, 1985, or early 1986.[3] The data in table A summarize the characteristics of these persons by age, sex, race, and Hispanic origin.

The most intriguing estimates in the table concern those for women and men. According to the SIPP, 11.7 million women began spells of job search or layoff in 1984, compared with 10.0 million men. In the CPS, whether measured on a monthly or annual work experience basis, the unemployment level of women is typically smaller than it is for men. For example, according to the March supplemental questions, 9.4 million women had some unemployment in 1984, while for men, the estimate was 12.2 million. The SIPP finding suggests, of course, that more women than men may have been looking for jobs than previously believed.[4]

The difference by sex in the number of persons beginning spells of job search and layoff was particularly evident among 25- to 54-year-olds (figure 1). In this age category, women outnumbered men by 1.2 million. Women in this age group were also more numerous than men among Whites, Blacks, and Hispanics.

Table B presents the frequency of spells by age-sex groups, and for Whites, Blacks and Hispanics (in the course of a year an individual could have more than one spell of job search or layoff). The 21.7 million persons began, on average, 1.23 spells of job search or layoff during 1984. There was virtually no difference in the average frequency of spells for men and women. Although Blacks experienced 1.26 spells, compared with 1.23 for Whites, the difference was not statistically significant.[5]

Persons experiencing only one spell of job search or layoff constituted almost 80 percent of the total. Only 2.8 percent of the total had three or more spells that began in 1984. A slightly greater proportion of Blacks than Whites—4.5 versus 2.5 percent—began three or more spells of job search and layoff.

DURATION OF COMPLETED SPELLS OF JOB SEARCH AND LAYOFF

Estimates of the duration of completed spells of job search and layoff are also different from BLS monthly estimates of the average duration of unemployment. Theoretically, the SIPP measures the length of a spell from the time a job search or layoff began to its conclusion (whether as a result of taking a job or withdrawing from the labor force). The BLS measures the length from the time a job search or layoff began up until the time of the survey.[6]

The estimates of the duration of completed spells of job search and layoff presented in tables C and D should be considered as *approximations*. This is because

[3]According to the supplemental work experience data from the March 1985 CPS, approximately 21.5 million persons experienced some unemployment in calendar year 1984. This estimate, however, includes persons whose unemployment spells began in the previous year (or earlier) and continued into 1984.

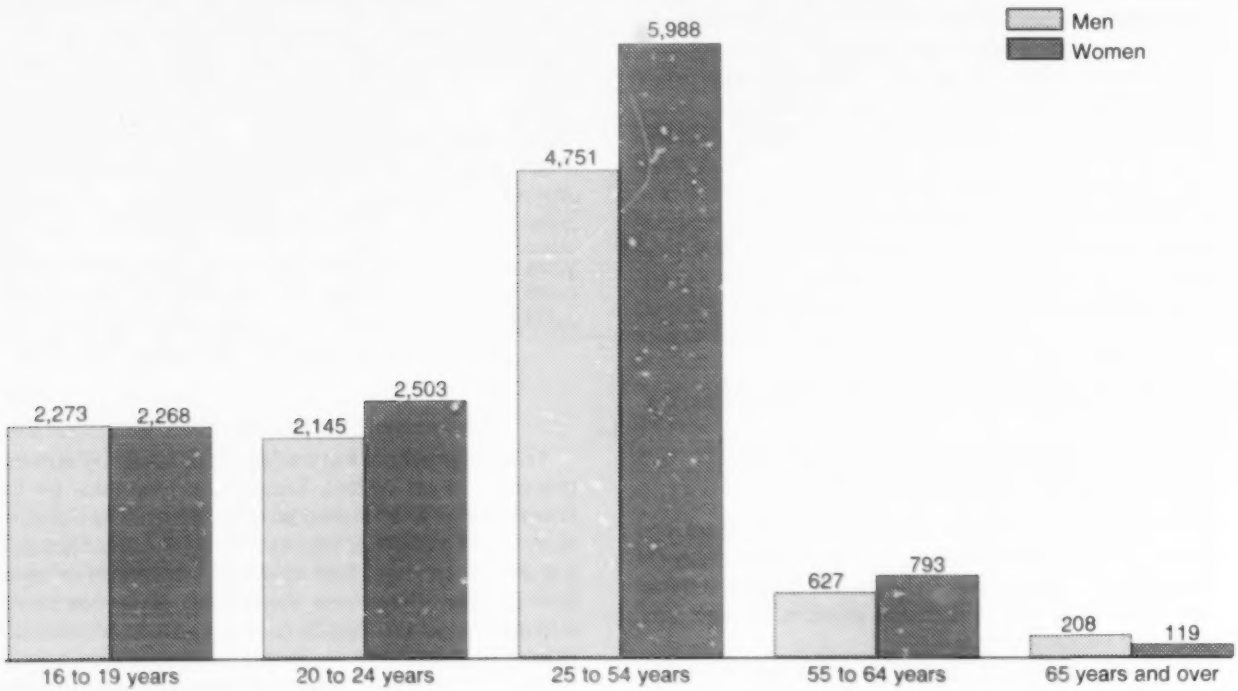
[4]Different survey methods may account for this difference. In the monthly CPS it is possible for persons to have very short spells of unemployment between monthly interviews which are not reported to the interviewers. In the March CPS supplemental questions on work experience, short spells of unemployment occurring in the previous calendar year may be forgotten. In SIPP, however, short spells of job search or layoff may be better reported because of the 4-month reference period which is a compromise between a very short and very long reference period.

[5]As is known from the CPS, however, Blacks have a much higher "incidence" of unemployment than do Whites. For example, in 1984, 26.7 percent of Blacks 16 years and over experienced some unemployment in that year, compared with 16.2 percent of the Whites.

[6]This is sometimes referred to as an "interrupted" spell of unemployment.

Figure 1.
Persons Who Had Spells of Job Search and Layoff, by Age and Sex
(Covers spells that began in 1984 and were completed in 1984, 1985, or early 1986)

In millions



in SIPP the basic time unit is a month and persons may have been looking for a job and taken one, all in the same month. For the purposes of this report, any job search or layoff during a month, would be counted as a

Table B. **Frequency of Spells of Job Search and Layoff, by Age and Sex Groups, Race, and Hispanic Origin**

(Covers spells that began in 1984 and were completed in 1984, 1985, or early 1986. Numbers in thousands)

Age, sex, race, and Hispanic origin	All persons	1 spell	2 spells	3 spells	4 spells or more	Spells per person
Both sexes	21,674	17,296	3,774	518	86	1.23
Male	10,003	7,939	1,781	262	21	1.24
16 to 19 years	2,273	1,738	488	47	–	1.26
20 to 24 years	2,145	1,673	405	51	15	1.26
25 to 54 years	4,751	3,831	764	149	6	1.23
55 to 64 years	627	508	110	8	–	1.20
65 years and over	208	188	14	6	–	1.12
Female	11,671	9,357	1,993	256	65	1.23
16 to 19 years	2,268	1,736	464	49	20	1.27
20 to 24 years	2,503	2,000	433	53	16	1.23
25 to 54 years	5,988	4,871	960	129	29	1.22
55 to 64 years	793	638	130	25	–	1.23
65 years and over	119	113	6	–	–	1.05
White	17,135	13,708	2,996	370	61	1.23
Black	3,875	3,055	647	148	25	1.26
Hispanic[1]	1,755	1,380	348	20	8	1.23

– Represents zero. [1]Persons of Hispanic origin may be of any race.
NOTE: Components may not add to totals because of rounding.

Table C. **Duration of Spells of Job Search and Layoff, by Age and Sex**

(Covers spells that began in 1984 and were completed in 1984, 1985, or early 1986. Numbers in thousands)

Age and sex	Total spells	1 month	2 months	3 months	4 months	5-7 months	8-11 months	12 months or more	Mean length
Both sexes	26,749	8,746	4,960	3,153	4,465	2,609	1,899	917	3.41
Male	12,377	3,770	2,234	1,573	2,014	1,306	986	493	3.62
16 to 19 years	2,855	858	515	343	494	269	215	161	3.71
20 to 24 years	2,697	896	407	359	485	264	212	76	3.43
25 to 54 years	5,837	1,722	1,176	729	798	665	502	246	3.71
55 to 64 years	754	221	77	113	176	108	48	12	3.52
65 years and over	234	74	60	29	61	-	10	-	2.59
Female	14,371	4,976	2,725	1,581	2,450	1,303	912	424	3.24
16 to 19 years	2,889	1,088	621	317	384	233	185	60	2.97
20 to 24 years	3,091	1,082	580	357	451	369	176	76	3.21
25 to 54 years	7,293	2,386	1,346	814	1,370	623	499	253	3.38
55 to 64 years	973	349	172	86	225	65	49	26	3.13
65 years and over	126	71	6	6	20	13	4	6	(B)

- Represents zero.
B Base less than 200,000.
NOTE: Components may not add to totals because of rounding. Users of spell estimates should be aware that the associated standard errors may be underestimated. The Census Bureau is currently researching this matter.

full month of job search or layoff. Despite this tendency toward overestimation, the duration estimates provide some indication of the period of time persons spent looking for work and on layoff.

Table C presents distributions of completed spells and average completed spell lengths by age-sex groups. The average duration for the 26.7 million completed spells of job search and layoff that began in 1984 was 3.41 months. Almost one-third of the spells, or 32.7 percent, were of 1 month duration. In contrast, only 3.4 percent of them lasted 12 months or longer (figure 2).

Women experienced 14.4 million spells of job search and layoff, compared with 12.4 million for men. The women's average duration of completed spells was less than that for men: 3.24 months versus 3.62 months. The teenage women's average was 2.97 months, but the teenage men's was 3.71 months.

The average spell duration for Blacks shown in table D was longer than for Whites and Hispanics: 3.94 months versus 3.28 and 3.34 months, respectively. (The spell durations of Whites and Hispanics were not significantly different.) Average durations for men were significantly greater than for women in the two race groups and among Hispanics. Among Black male teenagers, the spell lengths averaged 5.12 months as compared with 2.95 months for their female counterparts.

Figure 2.
Distribution of Total Spells of Job Search and Layoff, by Duration of Spell
(Covers spells that began in 1984 and were completed in 1984, 1985, or early 1986)

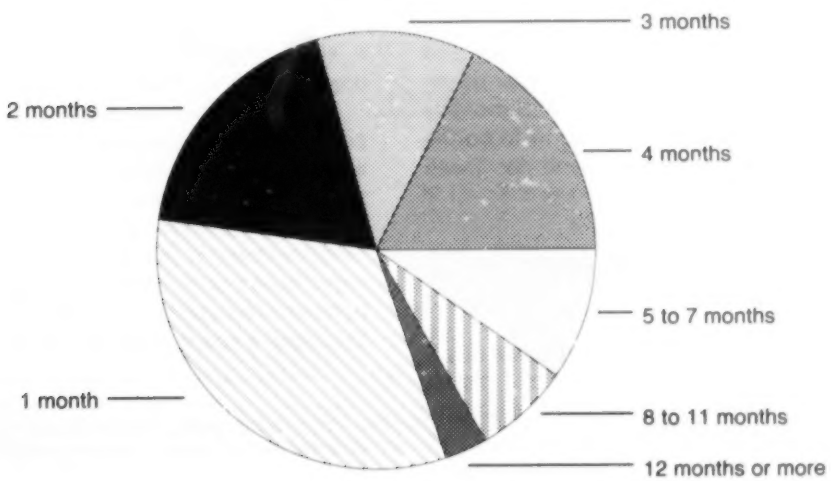


Table D. **Duration of Spells of Job Search and Layoff, by Age, Sex, Race, and Hispanic Origin**

(Covers spells that began in 1984 and were completed in 1984, 1985, or early 1986. Numbers in thousands)

Age, sex, race, and Hispanic origin	Total spells	1 month	2 months	3 months	4 months	5-7 months	8-11 months	12 months or more	Mean length
WHITE									
Total	21,059	7,034	4,032	2,544	3,279	2,239	1,335	595	3.28
Male	10,014	3,181	1,881	1,239	1,560	1,122	739	295	3.42
16 to 19 years	2,165	725	430	265	313	176	172	84	3.38
20 to 24 years	2,166	748	318	288	373	240	167	32	3.21
25 to 54 years	4,873	1,491	997	588	668	597	359	172	3.55
55 to 64 years	604	142	77	68	167	108	36	6	3.70
Female	11,046	3,854	2,151	1,306	1,720	1,117	597	303	3.15
16 to 19 years	2,112	790	473	262	219	194	121	52	2.98
20 to 24 years	2,369	832	465	329	292	321	79	50	3.03
25 to 54 years	5,672	1,880	1,086	641	1,001	530	362	172	3.28
55 to 64 years	790	293	121	74	189	59	34	20	3.08
BLACK									
Total	4,894	1,461	807	537	978	328	511	272	3.94
Male	1,982	462	316	285	354	158	236	172	4.54
16 to 19 years	603	98	66	70	156	93	43	77	5.12
20 to 24 years	465	137	78	59	78	24	46	44	4.52
25 to 54 years	762	154	172	123	88	41	137	45	4.41
Female	2,912	999	491	252	624	171	275	99	3.52
16 to 19 years	731	289	134	56	142	38	63	8	2.95
20 to 24 years	661	213	114	28	143	48	90	26	3.90
25 to 54 years	1,353	438	208	150	314	78	105	59	3.64
HISPANIC[1]									
Total	2,166	648	364	285	502	190	99	77	3.34
Male	1,000	239	183	172	196	114	48	48	3.70
16 to 19 years	290	74	40	58	45	49	12	13	3.77
20 to 24 years	240	70	20	31	51	31	20	17	4.19
25 to 54 years	378	80	101	67	84	26	-	19	3.28
Female	1,165	409	182	113	307	76	51	29	3.03
16 to 19 years	137	53	28	29	19	-	7	-	(B)
20 to 24 years	278	146	23	22	44	33	10	-	2.47
25 to 54 years	680	165	121	52	237	43	34	29	3.52

- Represents zero.

B Base less than 200,000.

[1]Persons of Hispanic origin may be of any race.

NOTE: Components may not add to totals because of rounding. Users of spell estimates should be aware that the associated standard errors may be underestimated. The Census Bureau is currently researching this subject.

The duration estimates for men and women and Blacks and Whites, even though they are approximations and conceptually different from the BLS monthly estimates, are consistent with what we know to be the relative lengths of job search and layoff for these groups.

THE CONCENTRATION OF TIME SPENT IN JOB SEARCH AND LAYOFF

Although upwards of one-third of all the spells of job search and layoff that began in 1984 were of 1 month duration, persistent unemployment is still a problem. Indeed, previous research has shown that a large part of the total time spent unemployed is accounted for by a small proportion of persons with long periods of unemployment.[7] The SIPP data confirm this conclusion.

Table E shows the distribution of the total months persons (who began spells in 1984) spent looking for work or on layoff by the length of the spells. One month spells, which we have shown made up 32.7 percent of all spells, contributed only 9.6 percent of the total months spent in job search and layoff. On the other hand, spells of 5 months or longer made up only 20.3 percent of all spells, but contributed 49.6 percent of all the months spent in job search and layoff.

[7]See, for example, Norman Bowers, "Probing the Issues of Unemployment Duration," *Monthly Labor Review*, July, 1980, pp. 23-32.

Among the major age-sex groups, men age 25 to 54 had the greatest concentration of months spent in persistent job search and layoff of five months or longer—56.3 percent. The comparable proportion for women was 47.2 percent. Spells of 5 months or longer accounted for 55.4 percent of all months spent in job search and layoff for Blacks, a much greater proportion than for Whites and Hispanics.

HEALTH INSURANCE AND UNEMPLOYMENT INSURANCE COVERAGE

An important dimension of an individual's spell of job search or layoff is his or her economic security during the spell. This economic security is typically dependent on the income of the household in which the person resides and his or her position in the household. If the person happens to be the chief breadwinner then the person's economic security, and that of the household, is imperiled. If, however, the person is a "first-time jobseeker" from an affluent household, the period of job search may not create any threat to their economic security.[8]

In this section we focus on whether or not persons who began spells of job search or layoff in 1984 had health insurance coverage and unemployment insurance coverage during the spell. The absence or presence of both coverages have a bearing on an individual's economic well-being during a spell of job search or layoff, even though the data presented here do not, by themselves, reflect the degree of their importance in this matter.

[8]The BLS has periodically examined the linkages between labor market problems, such as unemployment, and economic hardship. See *Linking Employment Problems to Economic Status*, U.S. Department of Labor, Bureau of Labor Statistics, Bulletin 2282, August 1987.

Health Insurance

The loss of health insurance coverage as a result of job termination has been a topical issue in public policy circles in recent years. In 1985, Federal legislation was passed requiring employers with 20 or more employees to make previously held employment-related health insurance available to workers who have been laid off (the Consolidated Omnibus Reconciliation Act of 1985, P.L. 99-272). Unemployed workers can now retain their coverage at their own expense for up to 18 months.

Table F shows the health insurance coverage status of persons during their spells of job search or layoff by their status one month before the spell. At that time, these persons may have been either employed or not in the labor force so the effect of a job loss is not fully seen.[9] (Further analysis of this issue would involve separating and comparing these two groups.) Nevertheless, health insurance status before and during the spell for the entire group is of interest.

About 11.0 million persons (or 63.6 percent of the total with only one spell) had health insurance coverage before their spell of looking for work or layoff began. Of that total, 1.0 million had no coverage during their spell and 1.2 million had coverage only in some months. Together, this amounts to 20.1 percent of the total with either no coverage or only some health insurance coverage during their spell.

The proportion of men aged 25 to 54 who had health insurance coverage before their spells began, but then either had none or only some, was 27.4 percent. The

[9]The SIPP data analyzed here do not reflect health insurance coverage obtained through public sources, that is, through Medicare, Medicaid, CHAMPUS, and CHAMPVA. Consequently, it is possible that some portion of the persons analyzed here who reported no private health insurance coverage, may indeed have been covered by one of the public programs.

Table E. **Distribution of Months of Spells of Job Search and Layoff, by Major Age-Sex Groups, Race, and Hispanic Origin**

(Covers spells that began in 1984 and were completed in 1984, 1985, or early 1986. In percent)

Age, sex, race, and Hispanic origin	Total	Total months in spells lasting—				
		1 month	2 months	3 months	4 months	5 months or more
Total	100.0	9.6	10.9	10.4	19.5	49.6
Both sexes:						
16 to 24 years	100.0	10.2	11.1	10.8	18.9	49.0
55 years and over	100.0	10.7	9.4	10.5	28.8	40.6
Men, 25 to 54 years	100.0	8.0	10.9	10.1	14.7	56.3
Women, 25 to 54 years	100.0	9.7	10.9	9.9	22.3	47.2
White	100.0	10.2	11.7	11.1	19.0	48.1
Black	100.0	7.6	8.4	8.4	20.3	55.4
Hispanic[1]	100.0	9.0	10.1	11.8	27.8	41.4

[1]Persons of Hispanic origin may be of any race.

NOTE: Components may not add to totals because of rounding. Users of spell estimates should be aware that the associated standard errors may be underestimated. The Census Bureau is currently researching this subject.

Table F. **Health Insurance Coverage During First and Only Spell of Job Search and Layoff, by Coverage Status 1 Month Before Spell Began**

(Covers spells that began in 1984 and were completed in 1984, 1985, or early 1986. Numbers in thousands)

Coverage status, age, sex, race, and Hispanic origin	All persons	Covered during spell:		
		All months	Some months	No months
Total	17,296	9,096	1,728	6,472
Covered	11,000	8,784	1,225	991
In own name	5,156	3,663	822	672
Not covered	6,296	312	503	5,481
Both sexes, 16 to 24 years	7,147	3,645	807	2,695
Covered	4,440	3,486	529	426
In own name	1,227	726	235	266
Not covered	2,705	159	279	2,269
Men, 25 to 54 years	3,832	1,805	471	1,555
Covered	2,398	1,743	387	269
In own name	1,911	1,341	365	204
Not covered	1,433	63	83	1,286
Women, 25 to 54 years	4,870	2,584	379	1,908
Covered	3,039	2,526	275	239
In own name	1,163	826	187	150
Not covered	1,830	57	105	1,668
Both sexes, 55 and over	1,448	1,062	71	314
Covered	1,121	1,029	35	58
In own name	853	766	35	53
Not covered	327	20	36	258
WHITE	13,708	7,756	1,302	4,650
Covered	9,292	7,514	980	797
In own name	4,279	3,080	661	538
Not covered	4,416	242	323	3,853
BLACK	3,054	1,008	395	1,651
Covered	1,373	963	236	173
In own name	705	439	152	114
Not covered	1,682	45	159	1,477
HISPANIC[1]	1,380	512	101	766
Covered	667	463	85	117
In own name	319	180	72	64
Not covered	714	49	16	649

[1]Persons of Hispanic origin may be of any race.

NOTE: Components may not add to totals because of rounding.

proportion for young persons 16 to 24 years old was 21.5 percent and for women 25 to 54, it was 16.9 percent. The lower proportions for young persons and women probably reflect the fact that they were more likely than men to have health insurance coverage in someone else's name. Only 8.3 percent of the persons age 55 and over had only some or no coverage during their spells.

Blacks and Hispanics who had spells of job search and layoff were more likely than Whites to have only some or no health insurance coverage after their spells began. The proportions were 29.8 percent for Blacks and 30.3 percent for Hispanics.. The proportion among Whites was 19.1 percent.

The SIPP data also indicate that the likelihood of having only some or no health insurance coverage during a spell of job search or layoff rises as the length of the spell increases. Table G shows that for those persons with a 1-month spell, 7.6 percent had some or no coverage, but for those with a spell of 9 months or more, 48.0 percent had only some months or no months of health insurance coverage. Differences by these spell durations were observed for the major age-sex groups (except for those persons age 55 and over).

Unemployment Insurance

Table H contains data on the unemployment insurance coverage status of spells of job search and layoff. Unemployment insurance benefits are available to unemployed workers who have demonstrated their attachment to the labor force by a specified amount of recent work and/or earnings in covered employment. Consequently, many of the job search and layoff spells observed in the SIPP were not covered because individuals did not meet eligibility requirements.

According to the data, of the 26.7 million spells that began in 1984, approximately 16.6 percent of the total had unemployment insurance coverage in some of the months of the spells (11.7 percent had coverage in all of

Table G. **Persons Who Had Only Some or No Months of Health Insurance Coverage During First and Only Spell of Job Search and Layoff, by Duration of Spell and Major Age-Sex Groups**

(Covers spells that began in 1984 and were completed in 1984, 1985, or early 1986. In percent)

Duration of spell	All persons	Both sexes, 16-24 years	Men, 25-54 years	Women, 25-54 years	Both sexes, 55 years and over
Total	20.1	21.5	27.4	16.9	8.3
1 month	7.6	9.3	11.6	4.1	3.4
2 months	16.5	18.7	21.2	13.9	(B)
3 months	19.8	24.4	22.3	13.2	(B)
4 months	21.9	25.1	33.8	25.5	11.7
5 to 8 months	35.6	33.5	47.2	32.8	(B)
9 months or more	48.0	57.4	40.3	51.2	(B)

B Base less than 200,000.

Table H. **Unemployment Insurance Coverage During Spells of Job Search and Layoff, by Duration of Spell, Major Age-Sex Groups, Race, and Hispanic Origin**

(Covers spells that began in 1984 and were completed in 1984, 1985, or early 1986. Numbers in thousands)

Age, sex, race, and Hispanic origin	Total spells	Spells lasting—					
		1 month	2 months	3 months	4 months	5-7 months	8 months or more
Total	26,749	8,746	4,960	3,153	4,465	2,609	2,816
Some coverage	4,434	-	783	794	870	1,069	919
All months	3,122	-	783	656	605	709	371
Both sexes, 16 to 24 years	11,532	3,923	2,123	1,376	1,815	1,135	1,161
Some coverage	895	-	117	189	186	251	152
All months	617	-	117	157	102	179	63
Men, 25 to 54 years	5,837	1,722	1,176	729	798	665	748
Some coverage	1,805	-	388	326	329	409	353
All months	1,332	-	388	263	241	260	181
Women, 25 to 54 years	7,293	2,386	1,346	814	1,370	623	752
Some coverage	1,262	-	225	179	233	275	349
All months	863	-	225	143	191	197	107
Both sexes, 55 and over	2,086	715	315	234	481	186	155
Some coverage	473	-	53	101	121	133	65
All months	310	-	53	93	71	74	20
WHITE	21,059	7,034	4,032	2,544	3,279	2,239	1,930
Some coverage	3,828	-	714	696	703	1,004	711
All months	2,735	-	714	576	494	672	280
BLACK	4,894	1,461	807	537	978	328	783
Some coverage	453	-	63	86	99	48	155
All months	303	-	63	67	78	21	74
HISPANIC[1]	2,166	643	364	285	502	190	176
Some coverage	337	-	41	78	95	78	44
All months	193	-	41	57	49	45	-

- Represents zero.

[1]Persons of Hispanic origin may be of any race.

NOTE: Components may not add to totals because of rounding. Users of spell estimates should be aware that the associated standard errors may be underestimated. The Census Bureau is currently researching this subject.

the months).[10] For spells of 2-month duration, coverage was observed in 15.8 percent of the spells, but in spells of 5 months or longer 36.6 percent of the spells had some coverage.[11]

Unemployment insurance coverage of spells of 5 months or longer was more comprehensive among men age 25 to 54 (53.9 percent) and among women of the same age (45.4 percent), than among men and women age 16 to 24 (17.6 percent). This probably reflects the relative differences in these groups in meeting eligibility requirements for unemployment insurance. (The difference in coverage between men and women aged 25 to 54 was not significant.)

The coverage rate among Blacks with spells of job search and layoff was only 9.3 percent, compared with 15.6 percent for Hispanics and 18.2 percent for Whites. (The coverage rates for Hispanics and Whites were not significantly different.) Only 18.3 percent of the spells of 5 months or longer experienced by Blacks had some coverage.

OUTCOMES OF SPELLS OF JOB SEARCH AND LAYOFF

One of the advantages of SIPP longitudinal data on job search and layoff is that it is possible to find out how the spell ends. A spell may end, of course, by finding or returning to a job (a job accession) or by ceasing to look for work or losing interest in the job market (a labor force withdrawal). Table I shows the outcomes of the 26.7 million spells of job search and layoff that began in 1984 for age, sex, race, and Hispanic groups.

The findings presented here must be qualified on a number of counts. First, the economy in 1984 was recovering strongly from the 1981-82 recession and creating millions of jobs. Whether or not a similar pattern of outcomes would prevail in another phase of the

[10]This statistic should not be confused with unemployed persons who at a point-in-time received unemployment insurance. In many spells there may be a lag between the beginning of the spell and receipt of the benefit. In other cases, the spell may be longer than the benefit period.

[11]Most States have a 26-week limit on the receipt of unemployment insurance benefits, although extended benefits can be received in periods of high unemployment for up to 13 additional weeks.

Table I. **Outcomes of Spells of Job Search and Layoff, by Age, Sex, Race, and Hispanic Origin**

(Covers spells that began in 1984 and were completed in 1984, 1985, or early 1986. In percent)

Age and sex	Total	Found job	Withdrew	Total	Found job	Withdrew
	Total			White		
Both sexes	100.0	67.4	32.6	100.0	71.0	29.0
Male	100.0	77.2	22.8	100.0	80.1	19.8
16 to 19 years	100.0	63.9	36.1	100.0	70.2	29.8
20 to 24 years	100.0	81.7	18.3	100.0	86.7	13.3
25 to 54 years	100.0	84.6	15.4	100.0	85.0	15.0
55 to 64 years	100.0	65.9	34.1	100.0	66.4	33.6
65 years and over	100.0	37.8	62.2	100.0	38.3	61.7
Female	100.0	59.0	41.0	100.0	62.8	37.2
16 to 19 years	100.0	57.2	42.8	100.0	62.9	37.1
20 to 24 years	100.0	61.0	39.0	100.0	66.2	33.8
25 to 54 years	100.0	59.1	40.9	100.0	62.1	37.9
55 to 64 years	100.0	58.8	41.2	100.0	60.1	39.9
65 years and over	100.0	(B)	(B)	100.0	(B)	(B)
	Black			Hispanic[1]		
Both sexes	100.0	52.7	47.3	100.0	57.8	42.2
Male	100.0	64.7	35.3	100.0	74.8	25.2
16 to 19 years	100.0	44.9	55.1	100.0	64.8	35.2
20 to 24 years	100.0	58.2	41.8	100.0	84.7	15.3
25 to 54 years	100.0	84.2	15.8	100.0	84.0	16.0
55 to 64 years	100.0	(B)	(B)	100.0	(B)	(B)
65 years and over	100.0	(B)	(B)	100.0	(B)	(B)
Female	100.0	44.6	55.4	100.0	43.2	56.8
16 to 19 years	100.0	40.8	59.2	100.0	(B)	(B)
20 to 24 years	100.0	42.7	57.3	100.0	36.0	64.0
25 to 54 years	100.0	46.9	53.1	100.0	43.8	56.2
55 to 64 years	100.0	(B)	(B)	100.0	(B)	(B)
65 years and over	100.0	(B)	(B)	100.0	(B)	(B)

B Base less than 200,000.

[1]Persons of Hispanic origin may be of any race.

NOTE: Components may not add to totals because of rounding. Users of spell estimates should be aware that the associated standard errors may be underestimated. The Census Bureau is currently researching this subject.

business cycle is conjectural. Second, the full nature of the jobs persons found or returned to is not explored in this report (e.g., the occupations or industries in which the jobs were found, if they were temporary jobs), although the average hourly earnings received are examined below. And third, spells which ended due to a withdrawal from the labor force may have occurred because of either market reasons (e.g., discouragement over job prospects, wage offers too low) or nonmarket reasons (e.g., returning to school, illness). Despite these qualifications the findings are instructive and confirm earlier research.[12]

Of the spells of job search and layoff that began in 1984, 67.4 percent came to an end as the result of finding or returning to a job and 32.6 percent ended as a result of a withdrawal from the labor force. The data in Table I show that the outcome for 77.2 percent of the men's spells was a job. In contrast, 59.0 percent of the spells of women came to an end as a result of a job. Almost 85.0 percent of the spells of men aged 25 to 54 ended in jobs, compared with 59.1 percent of the women's.

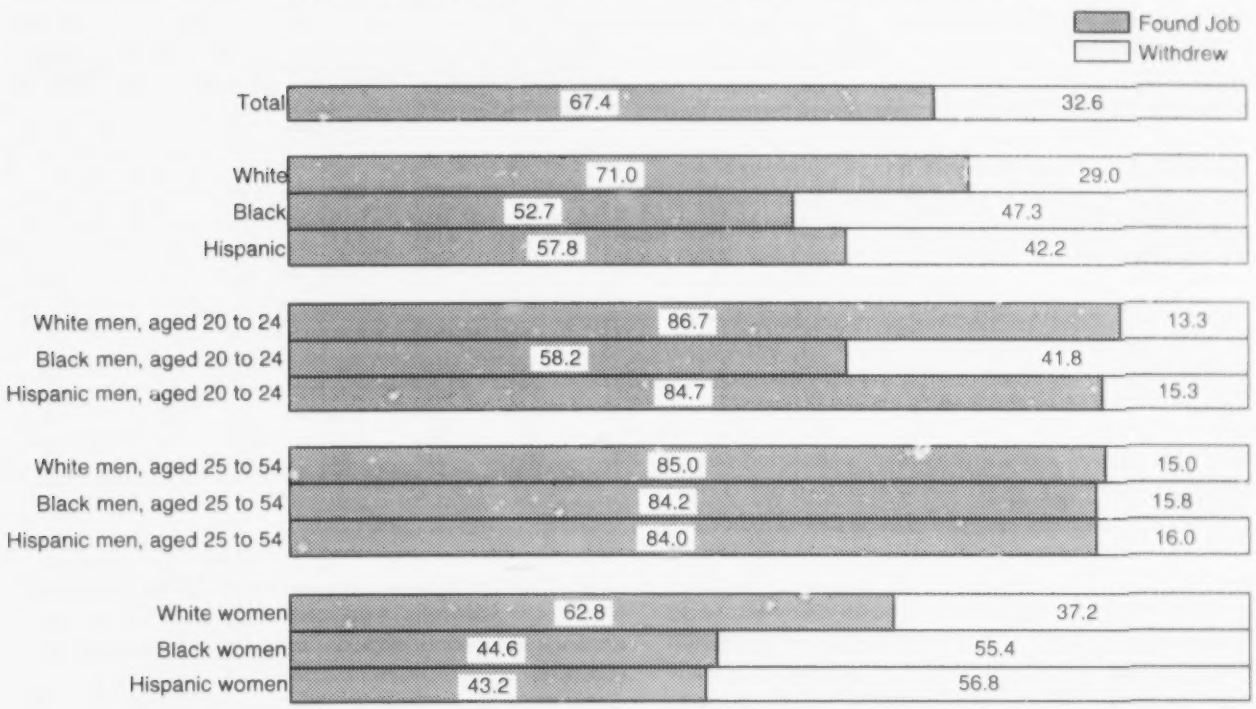
Whites were more likely to have job outcomes after their spells than Blacks and Hispanics. Slightly more than 70 percent of the spells of Whites ended with a job, compared with only 52.7 percent of the Blacks' spells and 57.8 percent of the Hispanics' spells (the difference in outcomes between Blacks and Hispanics was not significant). In other words, for whatever the reasons, Whites were more likely to complete their period of job search or layoff with a job rather than by withdrawing from the labor force.

Sharp differences in outcomes existed among young men and women by race and Hispanic origin (figure 3). Spell outcomes of White and Hispanic males age 20 to 24 were much more likely to be a job—86.7 and 84.7 percent, respectively—than was the case for Black males of the same age, 58.2 percent.[13] In contrast, spells of White, Black, and Hispanic men aged 25 to 54

[12]One of the more well-known analyses in recent years on the outcomes of spells of unemployment is that by Clark and Summers, *op cit.*

[13]The difference in outcomes between White and Hispanic males aged 20 to 24 was not statistically significant.

Figure 3.
Outcomes of Spells of Job Search and Layoff, for Selected Groups
(Covers spells that began in 1984 and were completed by 1984, 1985, or early 1986)



were all as likely to end with jobs (around 84 to 85 percent). Last, the job search and layoff spells of White women were more likely to end with jobs than the spells of Black and Hispanic women (62.8 percent versus 44.6 and 43.2 percent).[14]

Job Finders' Average Hourly Earnings

The group of individuals who found or returned to jobs after a spell of job search or layoff can be disaggregated into two groups. First, there are the persons who left jobs (whether voluntarily or involuntarily) during the SIPP survey period and eventually found new jobs or returned to their old ones. For these persons we know what their hourly earnings were on the previous job as well as the hourly earnings on the job they found or returned to. The second group is composed of persons who did not report any earnings from a previous job in the survey period, but did report earnings from the job they found. These successful job finders may have been either new entrants to the labor market or re-entrants after a period of absence. As will be seen, the average hourly earnings on the jobs both groups found or returned to differed.

[14]The difference in outcomes between Black and Hispanic women was not statistically significant.

The table below shows the distribution of average hourly earnings for persons who reported earnings from both previous jobs and new jobs.[15] Around 25 percent of the persons with new jobs had average hourly earnings of less than $3.35 an hour, almost 50 percent had hourly earnings between $3.35 and $6.99, and around 25 percent had earnings of $7.00 or more and hour. Hourly earnings on the new job averaged $5.81 compared to $6.18 on the previous job. This change represented a 6.0 percent reduction in the estimated wage level for these persons.

Hourly earnings	Previous job	New job
Total (in thousands)	9,514	9,514
Total (in percent)	100.0	100.0
Less than $3.35	23.9	25.9
$3.35 to $4.99	26.3	26.0
$5.00 to $6.99	21.0	22.2
$7.99 to $9.99	14.8	12.8
$10.00 or more	14.1	13.1

Table J shows the average hourly earnings on the new jobs and the previous jobs for young persons and

[15]Average hourly earnings were derived by dividing the person's monthly earnings by the product of his or her usual weekly hours and weeks worked in a month.

Table J. **Average Hourly Earnings of Persons Who Found Jobs After Completing First Spell of Job Search and Layoff and Average Hourly Earnings on Previous Job, by Duration of Spell and Major Age-Sex Groups**

(Covers spells that began in 1984 and were completed in 1984, 1985, or early 1986)

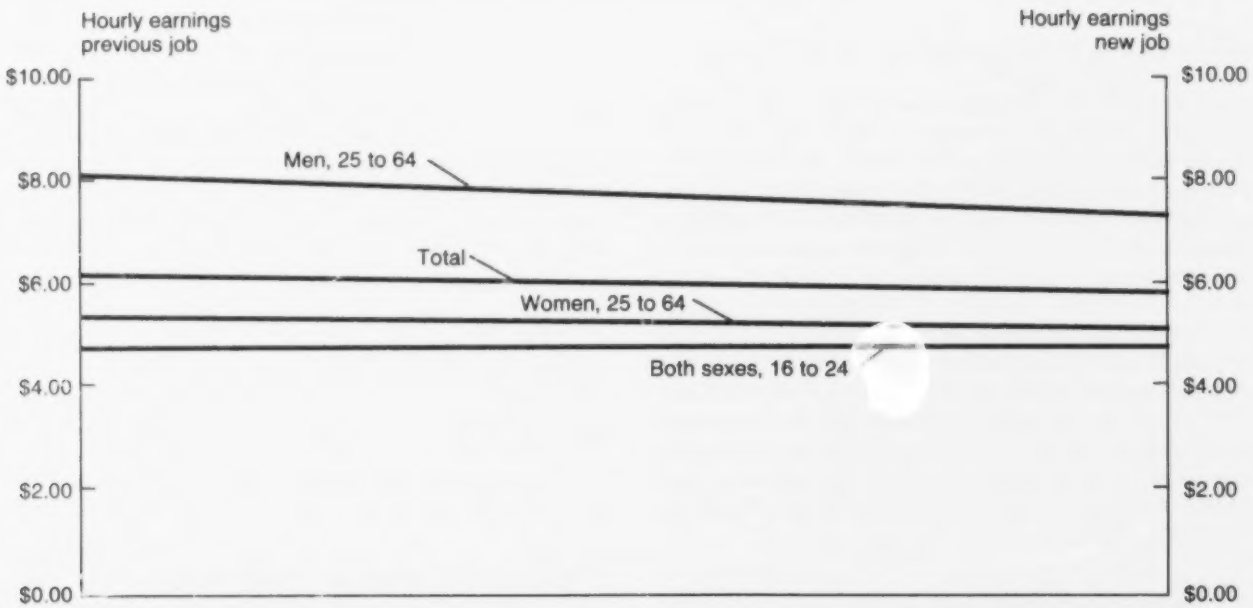
Duration of spell	Number (thous.)	Previous job	Standard error	New job	Standard error	Number (thous.)	Previous job	Standard error	New job	Standard error
	Total					Both sexes, 16-24 years				
Total persons	9,514	$6.18	.10	$5.81	.10	3,414	$4.73	.14	$4.74	.14
1 month	3,236	6.34	.19	6.11	.18	1,160	5.24	.28	5.44	.28
2 to 3 months	3,258	6.28	.17	5.83	.17	1,231	4.68	.22	4.65	.24
4 months	1,131	5.96	.31	5.46	.31	413	4.61	.38	4.24	.26
5 to 11 months	1,653	5.63	.23	5.45	.24	520	3.90	.26	3.89	.22
12 or more months	236	7.41	.74	5.82	.60	89	(B)	(B)	(B)	(B)
	Men, 25-64 years					Women, 25 to 64 years				
Total persons	3,589	8.15	.19	7.33	.19	2,405	5.35	.17	5.10	.16
1 month	1,176	8.12	.34	7.42	.33	852	5.53	.32	5.27	.29
2 to 3 months	1,211	8.48	.33	7.35	.32	783	5.42	.30	5.42	.28
4 months	393	8.14	.61	7.27	.57	301	4.93	.44	4.61	.48
5 to 11 months	704	7.17	.42	7.15	.44	428	5.18	.32	4.54	.36
12 or more months	106	(B)	(B)	(B)	(B)	41	(B)	(B)	(B)	(B)

(B) Base less than 200,000.
NOTE: Components may not add to totals because of rounding.

men and women 25 to 64 years old by duration of their job search or layoff. Men 25 to 64 who found or returned to jobs experienced a 10.1 percent reduction in hourly earnings—from $8.15 to $7.33. For women 25 to 64, hourly earnings were $5.35 on the previous job and $5.10 on the new job, but the difference in the averages was not statistically significant. The average hourly earnings for young persons were virtually unchanged (figure 4).

Figure 4.
Average Hourly Earnings of Persons Who Found Jobs After Completing First Spell of Job Search and Layoff and the Average Hourly Earnings on Their Previous Job, by Major Age-Sex Group

(Covers spells that began in 1984 and were completed in 1984, 1985, or early 1986)



Average hourly earnings for persons out of work a year or more fell from $7.41 to $5.82. On the other hand, the drop in hourly earnings for those with spells of one month or less was from $6.34 to $6.11 and this change was not statistically significant. Among White workers average hourly earnings dropped from $6.46 to $6.01, but for Blacks earnings were largely unchanged at about $4.65 an hour.

Table K presents the average hourly earnings for the 4.0 million persons who entered the labor force for the first time or were re-entering after an absence and found a job. The overall average for these persons was $4.46. (Approximately 41 percent of them had average hourly earnings below $3.35.) The majority of the individuals in this group were young persons between the ages of 16 and 24. Their average hourly earnings on the jobs they found or eventually returned to was $4.10.

Household Incomes of Persons Not Finding Jobs

A job search or layoff which ends in a labor force withdrawal may or may not have a significant impact on a household's economic situation. This usually depends on a number of factors, such as, the household member who incurred the spell and the length of spell, alternative sources of income available to the household, the labor supply responses of other household members, and so on. In addition, household income changes may occur that are not directly linked to the spell of job search or layoff, such as a household composition change, a windfall, or a loss. Consequently, to isolate the impact of an unsuccessful spell of job search or layoff on household income, a multiple-regression analysis would be required.

Despite the many factors that can influence household income over a period of unsuccessful job search or layoff, it is still useful to observe monthly incomes before spells begin and after they end. This is because we obtain some idea as to what happens to the economic situation of those households in which an unsuccessful job search or layoff takes place, even though causation is difficult to detect.

Approximately 7.0 million persons who began their first spell of job search or layoff in 1984 ended them by dropping out of the labor force. On average, their monthly household incomes fell from $1,878 to $1,737, or 7.5 percent (table L). There was little change in household income, on average, when the unsuccessful spell of job search or layoff lasted a month, but a drop of $234 did occur when the spell lasted between 5 and 11 months.

Household incomes for men 25 to 64 who did not find or return to jobs fell by 17.4 percent, or from $1,623 to $1,341. Obviously, joblessness for this traditional breadwinning group has a substantial impact on household income. They constituted, however, only a small part of all unsuccessful job finders. Among young persons 16 to 24 (who made up 44.2 percent of the total), monthly household incomes declined by 7.2 percent over their

Table K. **Average Hourly Earnings of Persons Who Found Jobs After Completing First Spell of Job Search and Layoff BUT Had No Average Hourly Earnings in Survey Period, by Duration of Spell and Major Age-Sex Groups**

(Covers spells that began in 1984 and were completed in 1984, 1985, or early 1986)

Duration of spell	Number (thous.)	Average hourly earnings	Standard error	Number (thous.)	Average hourly earnings	Standard error
	Total			Both sexes, 16-24 years		
Total persons	3,973	$4.46	.12	2,328	$4.10	.13
1 month	1,246	4.35	.19	751	3.93	.21
2 to 3 months	1,310	4.24	.20	783	4.11	.24
4 months	544	4.68	.37	310	4.03	.28
5 to 11 months	692	4.99	.33	399	4.50	.41
12 months or more	183	(B)	(B)	83	(B)	(B)
	Men, 25-64 years			Women, 25-64 years		
Total persons	366	6.22	.58	1,256	4.62	.22
1 month	79	(B)	(B)	401	4.59	.38
2 to 3 months	114	(B)	(B)	412	4.17	.32
4 months	46	(B)	(B)	179	(B)	(B)
5 to 11 month	95	(B)	(B)	197	(B)	(B)
12 months or more	32	(B)	(B)	67	(B)	(B)

B Base less than 200,000.
NOTE: Components may not add to totals because of rounding.

Table L. **Average Monthly Household Income of Persons Who Withdrew From Labor Force After Completing First Spell of Job Search and Layoff and Average Monthly Household Income 1 Month Before Spell Began, by Duration of Spell and Major Age-Sex Groups**

(Covers spells that began in 1984 and were completed in 1984, 1985, or early 1986)

Duration of spell	Number (thous.)	Before spell	Standard error	After spell	Standard error	Number (thous.)	Before spell	Standard error	After spell	Standard error
	Total					Both sexes, 16-24 years				
Total persons	7,004	$1,878	51	$1,737	49	3,098	$2,207	86	$2,048	80
1 month	2,103	2,009	100	1,983	94	1,026	2,418	164	2,449	147
2 to 3 months	1,705	1,954	107	1,755	104	784	2,266	184	1,991	176
4 months	1,855	1,725	94	1,686	99	734	2,145	161	1,996	157
5 to 11 months	1,024	1,664	103	1,430	88	430	1,682	171	1,517	154
12 months or more	317	2,186	279	1,290	168	124	(B)	(B)	(B)	(B)
	Men, 25-64 years					Women 25-64 years				
Total persons	950	1,623	128	1,341	122	2,763	1,628	72	1,566	70
1 month	207	1,856	342	1,621	317	801	1,601	121	1,562	125
2 to 3 months	200	1,855	265	1,341	274	675	1,623	137	1,636	139
4 months	271	1,512	211	1,353	233	802	1,461	138	1,550	154
5 to 11 months	227	1,493	250	1,204	191	345	1,744	139	1,496	117
12 months or more	45	(B)	(B)	(B)	(B)	141	(B)	(B)	(B)	(B)

B Base less than 200,000.
NOTE: Components may not add to totals because of rounding.

spells of job search and layoff. The change in average monthly household income for women 25 to 64 who did not find jobs was not statistically significant.

Monthly incomes in White households declined, on average, from $2,008 to $1,875 when a household member's spell of job search or layoff was resolved unsuccessfully (regardless of who the household member was). In Black households, average incomes fell from $1,420 to $1,251 when a household member's spell outcome ended in a labor force withdrawal.[16]

[16]The difference between the decline in income for White households and the decline in income for Black households was not statistically significant.

Appendix A. Overview of the SIPP Program

The SIPP's content consists of three basic elements. The first is a control card used to record basic social and demographic characteristics for each person in the household at the time of the initial interview. Because households are interviewed at intervals, the card is also used to record changes in characteristics and to record the dates when persons enter or leave the household. Finally, during each interview, information on each source of income is reviewed and the name of each job or business is transcribed to the card so that this information can be used in the updating process in subsequent interviews.

The second major element of the survey's content is the core portion of the questionnaire. The core questions are repeated at each interview and cover labor force activity, the types and amounts of income received during the 4-month period, and participation status in various programs. Some of the more important elements of labor force activity are recorded for each week of the period. (See appendix B for definitions and explanations of labor force concepts and terminology used in this report.) Income recipiency and amounts are recorded on a monthly basis with the exception of amounts of property income (interest, dividends, rent, etc.). Data for these types are recorded as totals for the 4-month reference period. The core also contains questions covering attendance in postsecondary schools, private health insurance coverage, public or subsidized rental housing, low-income energy assistance, and school breakfast and lunch participation.

The third major element is the various supplements or topical modules that are included during selected household visits. Examples of topics that have been covered in topical modules include (1) work history, (2) health characteristics (including disability), (3) assets and liabilities, (4) pension plan coverage, (5) child care, (6) child support agreements, (7) support for nonhousehold members, (8) program participation history, (9) reasons for not working and (10) tax payments.

SAMPLE DESIGN

The SIPP sample design for the 1984 panel consisted of about 26,000 housing units selected to represent the noninstitutional population of the United States. (See appendix C for more details of the procedures used to select the sample.) About 20,900 of these were occupied and eligible for interview. Table A-1 shows the sample design for the first panel of SIPP. Each household in the sample was interviewed at 4-month intervals over a period of 2 1/2 years beginning in October 1983. The reference period for the questions is the 4-month period preceding the interview. For example, households interviewed in October 1983 were asked questions for the months of June, July, August, and September. These households were interviewed again in February 1984 for the October through January period. The sample households within a given panel are divided into

Table A-1. **Design of First SIPP Panel**

Rotation	Wave	Interview month	Reference months
1	1	Oct. 83	June, July, Aug., Sept.(83)
2	1	Nov. 83	July, Aug., Sept., Oct.(83)
3	1	Dec. 83	Aug., Sept., Oct., Nov.(83)
4	1	Jan. 84	Sept., Oct., Nov., Dec.(83)
1	2	Feb. 84	Oct., Nov., Dec., Jan.(84)
2	2	Mar. 84	Nov., D[illegible].(83), Jan., Feb.(84)
3	2	Apr. 84	Dec.(83), Jan., Feb., Mar.(84)
4	3	May 84	Jan., Feb., Mar., Apr.(84)
1	3	June 84	Feb., Mar., Apr., May(84)
2	3	July 84	Mar., Apr., May, June (84)
3	3	Aug. 84	Apr., May, June, July (84)
4	4	Sept. 84	May, June, July, Aug.(84)
1	4	Oct. 84	June, July, Aug., Sept.(84)
2	4	Nov. 84	July, Aug., Sept., Oct.(84)
3	4	Dec. 84	Aug., Sept., Oct., Nov.(84)
4	5	Jan. 85	Sept., Oct., Nov., Dec.(84)
1	5	Feb. 85	Oct., Nov., Dec.(84), Jan.(85)
2	5	Mar. 85	Nov., Dec.(84), Jan., Feb.(85)
3	5	Apr. 85	Dec.(84), Jan., Feb., Mar.(85)
4	6	May 85	Jan., Feb., Mar., Apr.(85)
1	6	June 85	Feb., Mar., Apr., May (85)
2	6	July 85	Mar., Apr., May, June (85)
3	6	Aug. 85	Apr., May, June, July (85)
4	7	Sept. 85	May, June, July, Aug.(85)
1	7	Oct. 85	June, July, Aug., Sept.(85)
2	7	Nov. 85	July, Aug., Sept., Oct.(85)
3	7	Dec. 85	Aug., Sept., Oct., Nov.(85)
4	8	Jan. 86	Sept., Oct., Nov., Dec.(85)
1	8	Feb. 86	Oct., Nov., Dec.(85), Jan.(86)
2	8	Mar. 86	Nov., Dec.(85), Jan., Feb.(86)
3	8	Apr. 86	Dec.(85), Jan., Feb., Mar.(86)
4	9	May 86	Jan., Feb., Mar., Apr.(86)
1	9	June 86	Feb., Mar., Apr., May (86)
2	9	July 86	Mar., Apr., May, June (86)
3	9	Aug. 86	Apr., May, June, July (86)

four subsamples of nearly equal size. These subsamples are called rotation groups and one rotation group is interviewed each month. In general, one cycle of four interviews covering the entire sample, using the same questionnaire, is called a wave. This design was chosen because it provides a smooth and steady work load for data collection and processing.

SURVEY OPERATIONS

Data collection operations are managed through the Census Bureau's 12 permanent regional offices. A staff of interviewers assigned to SIPP conduct interviews by personal visit each month with most interviewing completed during the first 2 weeks of that month. Completed questionnaires are transmitted to the regional offices where they undergo an extensive clerical edit before being entered into the Bureau's SIPP data processing system. Upon entering this processing system the data are subjected to a detailed computer edit. Errors identified in this phase are corrected and computer processing continues.

Two of the major steps of computer processing are the assignment of weights to each sample person and imputation for missing survey responses. The weighting procedures assure that SIPP estimates of the number of persons agree with independent estimates of the population within specified age, race, and sex categories. The procedures also assure close correspondence with monthly CPS estimates of households. In almost all cases, a survey nonresponse is assigned a value in the imputation phase of processing. The imputation for missing responses is based on procedures generally referred to as the "hot deck" approach. This approach assigns values for nonresponses from sample persons who did provide responses and who have characteristics similar to those of the nonrespondents.

The longitudinal design of SIPP dictates that all persons 15 years old and over present as household members at the time of the first interview be part of the survey throughout the entire 2 1/2 year period. To meet this goal, the survey collects information useful in locating persons who move. In addition, field procedures were established that allow for the transfer of sample cases between regional offices. Persons moving within a 100-mile radius of an original sampling area (a county or group of counties) are followed and continue with the normal personal interviews at 4-month intervals. Those moving to a new residence that falls outside the 100-mile radius of any SIPP sampling area are interviewed by telephone if possible. The geographic areas defined by these rules contain more than 95 percent of the U.S. population.

Because some types of analysis using SIPP data are dependent on data for groups of individuals (households, families, etc.), provisions were made to interview all "new" persons living with original sample persons (those interviewed in the first wave). These new sample persons entering the survey through contact with original sample persons are considered as part of the sample only while residing with the original sample person.

FULL PANEL RESEARCH FILE

The source of the estimates in this report is the full panel research file from the 1984 SIPP. This longitudinal file was created by matching data from consecutive interviews. Included on this file are the records for each person for whom a complete set of data for a 32-month period was obtained. For additional information on this file, see appendix C.

Appendix B. Definitions and Explanations

Population coverage. The estimates in this report are restricted to the civilian, noninstitutional population (age 16 and over) of the United States and members of the Armed Forces living off post or with their families on post.

Age. The age of the person is based on the age of the person at the beginning of the 32-month period.

Race. The population is divided into three groups on the basis of race: White, Black, and "other races." The last category includes American Indians, Asian/Pacific Islanders, and any other race except White and Black.

Hispanic origin. Persons of Hispanic origin were determined on the basis of a question that asked for self-identification of the person's origin or descent. Respondents were asked to select their origin (or the origin of some other household member) from a "flash card" listing ethnic origins. Hispanics, in particular, those who indicated that their own origin was Mexican, Puerto Rican, Cuban, Central or South American, or some other Hispanic origin. It should be noted that persons of Hispanic origin may be of any race.

Looking for work (job search). Persons who looked for work in a given month are those who were 16 years old or over and (a) were without a job during at least 1 week during the month, (b) tried to get work or establish a business or profession in that week, and (c) were available to accept a job. Examples of jobseeking activities are registering at a public or private employment office, meeting with prospective employers, writing letters of application, and so on.

Layoff. The word "layoff" means release from a job because of slack work, material shortage, taking inventory, plant remodeling, and so on. Released workers anticipate recall at some future date, either specified or not. For this survey, persons were also on layoff who did not have a job but responded that they had spent at least 1 week on layoff from a job and that they were available for work. Also included were persons who responded that they were waiting to report to a new wage and salary job that was to begin within 30 days.

Spells of job search and layoff. In the 1984 SIPP Full Panel File, monthly labor force activity of persons age 16 and over is summarized by the use of eight employment status recodes (ESR's). These are:

ESR 1—With job entire month, worked all weeks.
ESR 2—With job entire month, missed one or more weeks (without pay) but not because of a layoff.
ESR 3—With job entire month, missed 1 or more weeks because of a layoff.
ESR 4—With job part of the month, but not because of a layoff or looking for work.
ESR 5—With job part of the month, some time spent on layoff or looking for work.
ESR 6—No job in month, spent entire month on layoff or looking for work.
ESR 7—No job in month, spent part of month on layoff or looking for work.
ESR 8—No job in month, no time spent on layoff or looking for work.

If an individual's ESR for a month is ESR 3, ESR 5, ESR 6, or ESR 7, the individual is considered as experiencing a 1-month spell of job search or layoff. A multi-month spell of job search or layoff would consist of the same or any combination of ESR's 3, 5, 6, or 7 in consecutive months. A monthly ESR of 1, 2, 4, or 8 terminates the spell. No distinction is made between a spell of job search and a spell of layoff in the report. Because the beginning and ending points of spells of job search or layoff cannot be precisely observed in all cases when the ESR's are used, the estimates of the duration of job search and layoff presented in this report should be considered approximations. Furthermore, these approximations will be biased upward since 1 week of job search or layoff in a month is counted as a full month of job search or layoff.

Comparability of SIPP and CPS labor force data. SIPP labor force estimates (specifically those relating to job search and layoff) differ from the monthly labor force estimates and annual work experience estimates obtained by the Bureau of Labor Statistics (BLS) through the Current Population Survey. Differences exist in labor force concepts and definitions, as well as survey procedures and designs. For example, in the monthly CPS the data are based on activities occurring in the week containing the 12th of the month and priority is given to employment before unemployment and unemployment before not being in the labor force; in SIPP, the data are based on activities taking place in the entire month, and an individual could have been looking for a job, found a job, and been outside the labor force, all in the same month (the same priority system used in the CPS,

however, is used on a weekly basis in SIPP). Another important difference relates to recall periods. In the monthly CPS the recall period is only 1 week, but in SIPP respondents are required to recall activities on a weekly basis that occurred over the previous 4 months (the recall period in the March CPS annual work experience supplement is approximately 3 to 15 months). Differences between the monthly CPS and SIPP labor force estimates are discussed in detail in an article by Paul M. Ryscavage and John E. Bregger entitled "New Household Survey and the CPS: Labor Force Differences," *Monthly Labor Review,* September, 1985, pp. 3-12.

Health insurance coverage. In this report, health insurance coverage means that persons were covered by private health insurance. Private health insurance may be purchased on an individual basis directly from a provider or it may be obtained on a group basis from or through an employer or union. Private health insurance does not include Medicare, Medicaid (or other government health programs for low income persons) or programs that provide health care to current or past members of the Armed Forces or their dependents.

Unemployment insurance coverage. This relates to the receipt of cash benefits paid to unemployed workers through a State or local unemployment agency. It includes all benefits paid under the Federal-State unemployment insurance program as established under the Social Security Act, as well as those benefits paid to State and local government employees, Federal civilian employees, and veterans.

Outcomes of spells. Spells of job search or layoff are completed by a person either finding or returning to a job or by withdrawing from the labor force. In the context of the ESR's, a spell of job search or layoff ending with a "job" outcome would mean a person was classified in the next month as an ESR 1 or ESR 2 or ESR 4; a spell of job search or layoff ending with a "withdrawal from the labor force" outcome would mean a person was classified an ESR 8.

Average hourly earnings. Estimates of average hourly earnings were derived by dividing the amount of earnings in a month by the product of weeks worked and usual weekly hours during the month.

Monthly household income. The monthly income estimates shown in this report for households are based on the sum of the monthly income received by each member of the household aged 15 years old or over.

Mean income. The mean income is the amount obtained by dividing the total income of a group by the number of units in that group.

Appendix C. Source and Accuracy of Estimates

SOURCE OF DATA

The data were collected during the first eight interviews of the 1984 panel of the Survey of Income and Program Participation (SIPP). The SIPP universe is the noninstitutionalized resident population living in the United States. This population includes persons living in group quarters, such as dormitories, rooming houses, and religious group dwellings. Crew members of merchant vessels, Armed Forces personnel living in military barracks, and institutionalized persons, such as correctional facility inmates and nursing home residents, were not eligible to be in the survey. Also, United States citizens residing abroad were not eligible to be in the survey. Foreign visitors who work or attend school in this country and their families were eligible; all others were not eligible. With the exceptions noted above, persons who were at least 15 years of age at the time of the interview were eligible to be interviewed in the survey.

The 1984 panel SIPP sample is located in 174 areas comprising 450 counties (including one partial county) and independent cities. Within these areas, clusters of two to four living quarters were systematically selected from lists of addresses prepared for the 1970 decennial census to form the bulk of the sample. To account for living quarters built within each of the sample areas after the 1970 census, a sample was drawn of permits issued for construction of residential living quarters through March 1983. In jurisdictions that do not issue building permits, small land areas were sampled and the living quarters within were listed by field personnel and then subsampled. In addition, sample living quarters were selected from a supplemental frame that included new construction for which building permits were issued prior to January 1, 1970, but for which construction was not completed until after April 1, 1970.

The first interview of this panel was conducted during October, November, and December 1983, and January 1984. Approximately one-fourth of the sample was interviewed in each of these months. Each sample person was visited every 4 months thereafter. At each interview, the reference period was the 4 months preceding the interview month.

Approximately 26,000 living quarters were originally designated for the sample. At the first interview, interviews were obtained from the occupants of about 19,900 of the 26,000 designated living quarters. Most of the remaining 6,100 living quarters were found to be vacant, demolished, converted to nonresidential use, or otherwise ineligible for the survey. However, approximately 1,000 of the 6,100 living quarters were not interviewed because the occupants refused to be interviewed, could not be found at home, were temporarily absent, or were otherwise unavailable. Thus, occupants of about 95 percent of all eligible living quarters participated in the first interview of the survey.

For subsequent interviews, only original sample persons (those interviewed in the first interview) and persons living with them were eligible to be interviewed. Original sample persons were followed if they moved to a new address, unless the new address was more than 100 miles from a SIPP sample area. Then, telephone interviews were attempted. All first interview noninterviewed households were automatically designated as non interviews for all subsequent interviews. When original sample persons moved to remote parts of the country, moved without leaving a forwarding address or refused to be interviewed, additional noninterviews resulted.

A person was classified as interviewed or noninterviewed for the panel based on the following definitions. Interviewed sample persons were defined to be 1) those for whom self or proxy responses were obtained for each reference month of all eight interviews or 2) those for whom self or proxy responses were obtained for the first reference month of the panel and for each subsequent reference month until they were known to have died or moved to an ineligible address (foreign living quarters, institutions, or military barracks). Noninterviewed persons were defined to be those for whom neither self nor proxy responses were obtained for one or more reference months of the eight interviews (but not because they were deceased or moved to an ineligible address). All members of a household were excluded from the weighting procedure if one or more members had no self or proxy responses for the first interview. (The processing system was unable to handle persons in this type of household.)

Approximately 52,800 persons were counted as initially interviewed. This count excludes about 1,300 interviewed persons who were members of house holds in which one or more members were noninterviews in the first inter view. In the weighting procedure, approximately 32,400 persons were classified as interviewed. Persons who missed interviews due to the March 1985 sample cut were not classified as noninterviews but

were adjusted for in the weighting procedure by a special factor (see "Estimation"). The person nonresponse rate is estimated to be 30 percent for the panel. Some respondents did not respond to some of the questions; therefore, the overall nonresponse rate for some items, especially sensitive income and money related items, is higher than the person nonresponse rate.

ESTIMATION

Several stages of weight adjustments were involved in the estimation procedure used to derive the SIPP longitudinal person weights. Each person received a base weight equal to the inverse of his/her probability of selection. Two noninterview adjustment factors were applied. One adjusted the weights of interviewed persons in interviewed households to account for households which were eligible for the sample but could not be interviewed at the first interview. The second was applied to compensate for person noninterviews occurring in subsequent interviews. Another factor was applied to each interviewed person's weight to account for the SIPP sample areas not having the same population distribution as the strata from which they were selected.

An additional stage of adjustment to longitudinal person weights was per formed to reduce the mean square error of the survey estimates. This was accomplished by bringing the sample estimates into agreement with monthly Current Population Survey (CPS) type estimates of the civilian (and some military) noninstitutional population of the United States by age, sex, race, Hispanic ethnicity, and householder/not householder status as of the specified control date. The control date for the weights was November 1, 1983. The CPS estimates were themselves brought into agreement with estimates from the 1980 decennial census which have been adjusted to reflect births, deaths, immigration, emigration, and changes in the Armed Forces since 1980.

Spell estimates. Longitudinal person weights can be used to construct the average number of consecutive months of possession of a characteristic (i.e., the average spell length for a characteristic) during a given time period. For example, one could estimate the average length of each spell of receiving food stamps during 1985. Also, one could estimate the average spell of job search or layoff that elapsed before a person found a new job. To construct such an estimate, first identify the persons who possessed the characteristic at some point during the time period of interest. Then, create two sums of these person's appropriate longitudinal weights: (1) sum the product of the weight times the number of months the spell lasted and (2) sum the weights only. Now, the estimated average spell length is given by (1) divided by (2). A person who experienced two spells during the time period of interest would be treated as two per sons and appear twice in sums (1) and (2).

ACCURACY OF ESTIMATES

SIPP estimates are based on a sample; they may differ somewhat from the figures that would have been obtained if a complete census had been taken using the same questionnaire, instructions, and enumerators. There are two types of errors possible in an estimate based on a sample survey: nonsampling and sampling. We are able to provide estimates of the magnitude of SIPP sampling error, but this is not true of nonsampling error. Found in the next sections are descriptions of sources of SIPP nonsampling error, followed by a discussion of sampling error, its estimation, and its use in data analysis.

Nonsampling variability. Nonsampling errors can be attributed to many sources, e.g., inability to obtain information about all cases in the sample, definitional difficulties, differences in the interpretation of questions, inability or unwillingness on the part of the respondents to provide correct information, inability to recall information, errors made in collection such as in recording or coding the data, errors made in processing the data, errors made in estimating values for missing data, biases resulting from the differing recall periods caused by the inter viewing pattern used, and failure of all units in the universe to have some probability of being selected for the sample (undercoverage). Quality control and edit procedures were used to reduce errors made by respondents, coders and interviewers.

Undercoverage in SIPP results from missed living quarters and missed per sons within sample households. It is known that undercoverage varies with age, race, and sex. Generally, undercoverage is larger for males than for females and larger for Blacks than for non-Blacks. Ratio estimation to independent age-race-sex population controls partially corrects for the bias due to survey undercoverage. However, biases exist in the estimates to the extent that persons in missed households or missed per sons in interviewed households have characteristics different from those of interviewed persons in the same age-race-sex group. Further, the independent population controls used have not been adjusted for undercoverage. The Bureau has used complex techniques to adjust the weights for nonresponse, but the success of these techniques in avoiding bias is unknown.

Comparability with other estimates. Caution should be exercised when comparing data from this report with data from other SIPP publications or with data from other surveys. The comparability problems are caused

by such sources as the seasonal patterns for many characteristics, different nonsampling errors, and different concepts and procedures.

Sampling variability. Standard errors indicate the magnitude of the sampling error. They also partially measure the effect of some nonsampling errors in response and enumeration, but do not measure any systematic biases in the data. The standard errors for the most part measure the variations that occurred by chance because a sample rather than the entire population was surveyed.

USES AND COMPUTATION OF STANDARD ERRORS

Confidence intervals. The sample estimate and its standard error enable one to construct confidence intervals, ranges that would include the average result of all possible samples with a known probability. For example, if all possible samples were selected, each of these being surveyed under essentially the same conditions and using the same sample design, and if an estimate and its standard error were calculated from each sample, then:

1. Approximately 68 percent of the intervals from one standard error below the estimate to one standard error above the estimate would include the average result of all possible samples.
2. Approximately 90 percent of the intervals from 1.6 standard errors below the estimate to 1.6 standard errors above the estimate would include the average result of all possible samples.
3. Approximately 95 percent of the intervals from two standard errors below the estimate to two standard errors above the estimate would include the average result of all possible samples.

The average estimate derived from all possible samples is or is not contained in any particular computed interval. However, for a particular sample, one can say with a specified confidence that the average estimate derived from all possible samples is included in the confidence interval.

Hypothesis testing. Standard errors may also be used for hypothesis testing, a procedure for distinguishing between population characteristics using sample estimates. The most common types of hypotheses tested are 1) the population characteristics are identical versus 2) they are different. Tests may be performed at various levels of significance, where a level of significance is the probability of concluding that the characteristics are different when, in fact, they are identical.

All statements of comparison in the report have passed a hypothesis test at the 0.10 level of significance or better. This means that, for differences cited in the report, the estimated absolute difference between parameters is greater than 1.6 times the standard error of the difference.

To perform the most common test, compute the difference $X_A - X_B$, where X_A and X_B are sample estimates of the characteristics of interest. A later section explains how to derive an estimate of the standard error of the difference $X_A - X_B$. Let that standard error be s_{DIFF}. If $X_A - X_B$ is between -1.6 times s_{DIFF} and +1.6 times s_{DIFF}, no conclusion about the characteristics is justified at the 10 percent significance level. If, however, $X_A - X_B$ is smaller than -1.6 times s_{DIFF} or larger than +1.6 times s_{DIFF}, the observed difference is significant at the 10 percent level. In this event, it is commonly accepted practice to say that the characteristics are different. Of course, sometimes this conclusion will be wrong. When the characteristics are, in fact, the same, there is a 10 percent chance of concluding that they are different.

Note that as more tests are performed, more erroneous significant differences will occur. For example, if 100 independent hypothesis tests are performed in which there are no real differences, it is likely that about 10 erroneous differences will occur. Therefore, if a large number of tests are performed, the significance of any single test should be inter preted cautiously.

Note concerning small estimates and small differences. Summary measures are shown in the report only when the base is 200,000 or greater. Because of the large standard errors involved, there is little chance that estimates will reveal useful information when computed on a base smaller than 200,000. Also, nonsampling error in one or more of the small number of cases providing the estimate can cause large relative error in that particular estimate. Estimated numbers are shown, however, even though the relative standard errors of these numbers are larger than those for the corresponding percentages. These smaller estimates are provided primarily to permit such combinations of the categories as serve each user's needs. Therefore, care must be taken in the interpretation of small differences since even a small amount of nonsampling error can cause a borderline difference to appear significant or not, thus distorting a seemingly valid hypothesis test.

Standard error parameters and tables and their use. Most SIPP estimates have greater standard errors than those obtained through a simple random sample because clusters of living quarters are sampled for the SIPP. To derive standard errors that would be applicable to a wide variety of estimates and could be prepared at a moderate cost, a number of approximations were required. Estimates with similar standard error behavior were

grouped together and two parameters (denoted "a" and "b") were developed to approximate the standard error behavior of each group of estimates. Because the actual standard error behavior was not identical for all estimates within a group, the standard errors computed from these parameters provide an indication of the order of magnitude of the standard error for any specific estimate. These "a" and "b" parameters vary by characteristic and by demographic subgroup to which the estimate applies. Table C-1 provides base "a" and "b" parameters to be used for estimates in this report.

For those users who wish further simplification, we have also provided general standard errors in tables C-2 and C-3. Note that these standard errors must be adjusted by a factor from table C-1. The standard errors resulting from this simplified approach are less accurate. Methods for using these parameters and tables for computation of standard errors are given in the following sections.

It should be noted that the parameters given in table C-1 for calculating standard errors of spell estimates are preliminary and should be used cautiously. In general, the use of the spell estimate parameters may result in underestimates of standard errors. Research is currently underway to further evaluate the accuracy of parameters used for calculating standard errors of spell estimates presented in this report.

Standard errors of estimated numbers. The approximate standard error, s_x, of an estimated number of persons shown in this report can be obtained in two ways.

It may be obtained by the use of the formula

$$s_x = fs \qquad (1)$$

where f is the appropriate "f" factor from table 1, and s is the standard error of the estimate obtained by interpolation from table 2. Alternatively, s_x may be approximated by the formula

$$s_x = \sqrt{ax^2 + bx} \qquad (2)$$

Here x is the estimated number and "a" and "b" are the parameters associated with the particular type of characteristic. Use of formula (2) will provide more accurate results than the use of formula (1).

Illustration. Suppose the SIPP estimate of the total number of persons experiencing only one spell of job search or layoff that began in 1984 is 17,296,000. The appropriate "a" and "b" parameters to use in calculating a standard error for the estimate are obtained from table C-1. They are a = -0.0000322 and b = 5,800, respectively. Using formula (2), the approximate standard error is

$$\sqrt{(-0.0000322)(17{,}296{,}000)^2 + (5{,}800)(17{,}296{,}000)} = 301{,}000$$

Table C-1. **SIPP Generalized Variance Parameters for Estimates**

Subject	a	b	f factor
PERSONS WITH SPELLS			
Total or White:			
Both Sexes	-0.0000322	5,800	1.00
Male	-0.0000672	5,800	1.00
Female	-0.0000617	5,800	1.00
Black:			
Both Sexes	-0.0002809	7,804	1.16
Male	-0.0005994	7,804	1.16
Female	-0.0005283	7,804	1.16
NUMBER AND LENGTH OF SPELLS			
Total or White persons:			
Both Sexes	-0.0000464	8,353	1.20
Male	-0.0000967	8,353	1.20
Female	-0.0000888	8,353	1.20
Black persons:			
Both Sexes	-0.0004044	11,238	1.39
Male	-0.0008632	11,238	1.39
Female	-0.0007608	11,238	1.39

The 90-percent confidence interval as shown by the data is from 16,814,000 to 17,778,000. Therefore, a conclusion that the average estimate derived from all possible samples lies within a range computed in this way would be correct for roughly 90 percent of all samples.

Using formula (1), the appropriate "f" factor (f = 1.00) from table C-1, and the standard error of the estimate by interpolation using table C-2, the approximate standard error is

$$s_x = (1.00)(301{,}000) = 301{,}000$$

The 90-percent confidence interval as shown by the data is from 16,814,000 to 17,778,000.

Standard errors of estimated percentages. This section refers to the two types of percentages represented in this report. These are the percentages of a group of persons possessing a particular attribute and the percentages of spells of job search and layoff. For example, the percentage of persons who began spells of job search and layoff in 1984 and the percentage of spells of job search and layoff that began and ended with a job in 1984 demonstrates the two types of percentages, respectively. The reliability of an estimated percentage, computed using sample data for both numerator and denominator, depends upon both the size of the percentage and the size of the total upon which the percentage is based. Estimated percentages are relatively more reliable than the corresponding estimates of the numerators of the percentages, particularly if the percentages are over 50 percent. For example, the percent of employed persons is more reliable than the estimated number of employed persons. When the numerator and denominator of the percentage have different parameters, use the parameter (and appropriate factor) of the

numerator. If proportions are presented instead of percentages, note that the standard error of a proportion is equal to the standard error of the corresponding percentage divided by 100.

For the percentage of persons or spells, the approximate standard error, $s_{(x,p)}$, of the estimated percentage, p, can be obtained by the formula

$$s_{(x,p)} = fs \qquad (3)$$

where f is the appropriate "f" factor from table C-1, and s is the standard error of the estimate obtained by interpolation from table C-3. Alternatively, it may be approximated by the formula

$$s_{(x,p)} = \sqrt{\frac{b}{x}p(100-p)} \qquad (4)$$

Here x is the base of the percentage, p is the percentage ($0<p<100$), and b is the "b" parameter associated with the characteristic in the numerator. Use of this formula will give more accurate results than use of formula (3).

Illustration. Suppose that we have a SIPP estimate of 5,837,000 spells of job search for males aged 25 to 54. Of these, 85.0 percent ended in a job. Using formula (4) and the "b" parameter of 8,353 (from table C-1), the approximate standard error is

$$\sqrt{\frac{(8,353)}{(5,837,000)}(85.0)(100-85.0)} = 1.4 \text{ percent}$$

Consequently, the 90-percent confidence interval as shown by these data is from 82.8 to 87.2 percent.

Using formula (3), the appropriate "f" factor ($f=1.20$) from table C-1, and the appropriate s by interpolation using table 3, the approximate standard error is

$$s_x = (1.2)(1.09) = 1.3 \text{ percent}$$

Table C-2. **Standard Errors of Estimated Numbers**

(Numbers in thousands)

Size of estimate	Standard error	Size of estimate	Standard error
200	34	22,000	335
300	42	26,000	359
600	59	30,000	387
1,000	76	50,000	458
2,000	107	80,000	508
5,000	169	100,000	508
8,000	211	130,000	458
11,000	245	135,000	443
13,000	264	150,000	381
15,000	282	160,000	321
17,000	299	180,000	27

The 90-percent confidence interval shown by these data is from 82.9 to 87.1 percent.

Standard error of a mean or aggregate. A mean is defined here to be the average quantity of some characteristic (other than the number of per sons) per person. An aggregate is defined to be the total quantity of some characteristic summed over all units in a subpopulation. For example, a mean could be the average number of spells of females age 25 to 54; an aggregate, the total spells for that subpopulation. The standard error of a mean can be approximated by formula (5) below and the standard error of an aggregate can be approximated by formula (6). Because of the approximations used in developing formulas (5) and (6), an estimate of the standard error of the mean or aggregate obtained from these formulas will generally underestimate the true standard error. The formula used to estimate the standard error of a mean, x, is

$$s_x = \sqrt{\frac{b}{y}s^2} \qquad (5)$$

where y is the base, s^2 is the estimated population variance of the characteristic and b is the "b" parameter associated with the particular type of characteristic. The standard error of an aggregate k is estimated by:

$$s_k = \sqrt{b\,y\,s^2} \qquad (6)$$

To estimate the population variance, s^2, the range of values for the characteristic is divided into c intervals, where the lower and upper boundaries of interval j are Z_{j-1} and Z_j, respectively. Each person is placed into one of the c groups such that the value of the characteristic is between Z_{j-1} and Z_j. The estimated population variance, s^2, is then given by formula (7):

$$s^2 = \left[\sum_{j=1}^{c} p_j m_j^2\right] - \bar{x}^2 \qquad (7)$$

where p_j is the estimated proportion of persons in group j (based on weighted data), and $m_j = (Z_{j-1} + Z_j)/2$. The most representative value of the characteristic in group j is assumed to be m_j. If group c is open ended, i.e., no upper interval boundary exists, then an approximate value for m_c is

$$m_c = \frac{3}{2}Z_{c-1}$$

The mean, $\bar{x}$, can be obtained using the following formula:

$$\bar{x} = \sum_{j=1}^{c} p_j m_j \qquad (8)$$

Illustration for mean. Suppose that the distribution of the number of spells are given in the following table for women aged 25 to 54 who were looking for jobs or on layoff that began in 1984 and were completed.

Subject	Total	1 spell	2 spells	3 spells	4 spells or more
Females, 25-64 years (thous.)	5,988	4,871	960	129	29
Percent of total	100	81.4	16.0	2.2	0.4

The average number of spells per person from formula (8) is

$$x = 0.814\,(1) + 0.16\,(2) + 0.022\,(3) + 0.004\,(6) = 1.22$$

Using formula (7) and the average number of spells per person of 1.22 the estimated population variance, s^2, is

$$s^2 = [30.814(1)^2 + 0.16(2)^2 + 0.022\,(3)^2 + 0.004\,(6)^2] - (1.22)^2 = 0.3076$$

The appropriate "b" parameter from table 1 is 5,800. Now using formula (5), the estimated standard error of the mean is

$$s_x = \sqrt{\frac{5{,}800}{5{,}988{,}000}(0.3076} = 0.0176$$

The 90-percent confidence interval for the mean shown by these data is from 1.19 to 1.25 spells of job search and layoff per women aged 25 to 54 years.

Illustration for aggregates. Suppose the total number of spells for this subpopulation is 7,293,000. Now, using formula (6) and the appropriate "b" parameter 5,800 from table 1, the estimated standard error of the aggregate is

$$s_x = \sqrt{(5{,}800)(5{,}988{,}000)(0.3076)} = 103{,}000$$

The 90-percent confidence interval for the aggregate shown by these data is 7,128,000 to 7,458,000 total number of spells for women aged 25 to 54 years.

Standard error of a difference. The standard error of a difference between two sample estimates, x and y, is equal to

$$s_{(x-y)} = \sqrt{s_x^2 + s_y^2 - 2rs_xs_y} \qquad (9)$$

where s_x and s_y are the standard errors of the estimates x and y, and *r is the correlation coefficient between the characteristics estimated by x and y. The estimates can be numbers, averages, percents, ratios, etc. When the characteristics estimated by x and y were considered correlated in this report, a correlation coefficient of 0.5 was used in the above formula. This value is considered preliminary and should be used cautiously. Underestimates or overestimates of standard error of differences result if the estimated correlation coefficient is overestimated or underestimated, respectively.

Illustration. Suppose that we are interested in the difference in the number of men and women who received health insurance coverage during their first and only spell of job search. Of the men and women aged 25-54 who were covered by health insurance one month before their spell began, 1,743,000 men remained covered through all months of their spell compared to 2,526,000 women who were covered. Using parameters and factors from table C-1, the standard errors of these numbers are approximately 100,000 and 119,000 for men and women, respectively.

Table C-3. **Standard Errors of Estimated Percentages**

Base of estimated percentage (thousands)	Estimated percentage					
	≤1 or ≥ 99	2 or 98	5 or 95	10 or 90	25 or 75	50
200	1.7	2.4	3.7	5.0	7.2	8.5
300	1.4	2.0	3.0	4.0	5.9	7.0
600	1.0	1.4	2.1	2.9	4.2	4.9
1,000	0.8	1.0	1.7	2.3	3.2	3.8
2,000	0.5	0.8	1.1	1.6	2.3	2.7
5,000	0.3	0.4	0.7	1.0	1.5	1.7
8,000	0.3	0.4	0.6	0.8	1.1	1.4
11,000	0.2	0.3	0.5	0.7	1.0	1.2
13,000	0.2	0.3	0.5	0.6	0.9	1.1
17,000	0.2	0.3	0.4	0.5	0.8	0.9
22,000	0.2	0.2	0.4	0.5	0.7	0.8
26,000	0.2	0.2	0.3	0.5	0.7	0.8
30,000	0.1	0.2	0.3	0.4	0.6	0.7
50,000	0.1	0.2	0.2	0.4	0.5	0.5
80,000	0.1	0.1	0.2	0.3	0.4	0.4
100,000	0.1	0.1	0.2	0.2	0.3	0.4
130,000	0.1	0.1	0.2	0.2	0.3	0.3
180,000	0.1	0.1	0.1	0.2	0.3	0.3

Now, the standard error of the difference is computed using the above two standard errors. The correlation between these estimates is zero. Therefore, standard error of the difference is computed by formula (9):

$$s_{(x-y)} = \sqrt{(100{,}000)^2 + (119{,}000)^2} = 155{,}000$$

Suppose that it is desired to test at the 10 percent significance level whether the number of men differs significantly from the number of women. To perform the test, compare the difference of 783,000 to the product 1.6 x 155,000 = 248,000. Since the difference is larger than 1.6 times the standard error of the difference, the data show that the estimates for the number of men and women covered by health insurance one month before and for every month during their spell differ significantly at the 10 percent level.

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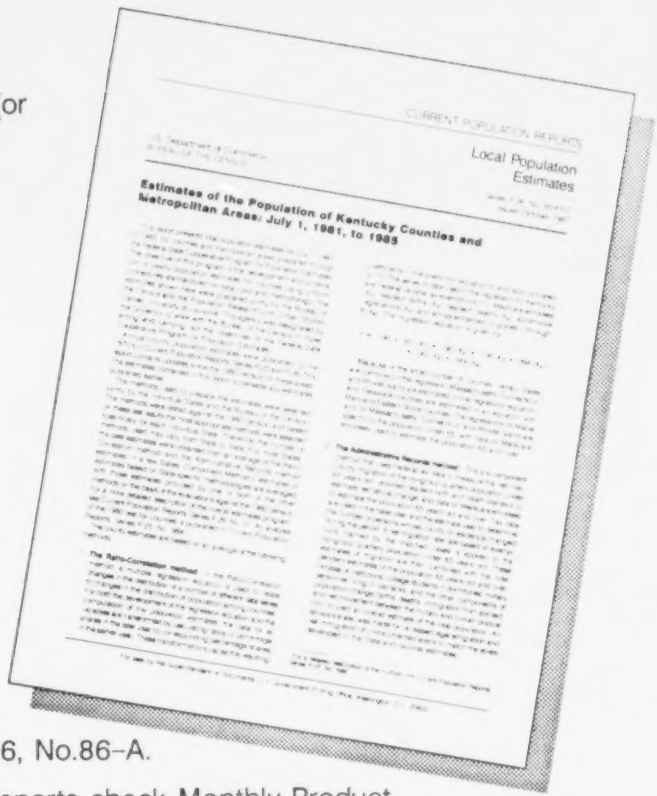
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